The Systematic Origins of Monetary Policy Shocks by Hack, Istrefi, and Meier

Discussion by Valerie A. Ramey

Hoover Institution, NBER, CEPR

FRB SF “Macroeconomics and Monetary Policy” Feb. 21, 2025

Summary of Paper

Summary of Paper

- Offers interesting new insights and results on monetary policy shocks.

Summary of Paper

- Offers interesting new insights and results on monetary policy shocks.

- Explores effects of time-varying FOMC preferences on estimation of monetary policy shocks.

Summary of Paper

- Offers interesting new insights and results on monetary policy shocks.

- Explores effects of time-varying FOMC preferences on estimation of monetary policy shocks.

  - Demonstrates that time-varying coefficients on monetary policy rules will confound the estimation of monetary policy shocks.

  - Shows that leading monetary shocks are predicted by Istrefi's FOMC Hawk/Dove balance and Hack-Istrefi-Meier's Hawk/Dove rotation.

  - Estimates changes in macro variable IRFs when standard monetary shocks are purged of preference shifts.

Outline of Discussion

1. Review of estimating standard monetary shocks.

2. Summary of what Hack-Meier-Istrefi do.

3. Stepping back: What is the economic interpretation of a “monetary policy shock?”

4. Linear vs. nonlinear monetary policy rules.

5. Monetary policy shocks as complements, not substitutes.

1. Estimating Standard Monetary Shocks

- Most researchers estimate the shock as a residual of a Taylor-type rule.

  The shock is the part not explained by current data or Fed forecasts.

1. Estimating Standard Monetary Shocks

- Most researchers estimate the shock as a residual of a Taylor-type rule.

  The shock is the part not explained by current data or Fed forecasts.

- Why do we care about monetary shocks?

1. Estimating Standard Monetary Shocks

- Most researchers estimate the shock as a residual of a Taylor-type rule.

  The shock is the part not explained by current data or Fed forecasts.

- Why do we care about monetary shocks?

  - Variance decompositions.

  - Instrument for estimating the effects of systematic monetary policy.

Example: Romer and Romer (2004) Shock

- Estimate a monetary policy rule by regressing the change in the intended federal funds rate on initial level as well as Greenbook forecasts of quarter -1, 0, 1, 2 GDP growth and inflation, current unemployment, and changes in GDP growth forecasts since the last meeting.

Example: Romer and Romer (2004) Shock

- Estimate a monetary policy rule by regressing the change in the intended federal funds rate on initial level as well as Greenbook forecasts of quarter -1, 0, 1, 2 GDP growth and inflation, current unemployment, and changes in GDP growth forecasts since the last meeting.

$$(1) \quad \Delta ff_m = \alpha + \beta ffb_m + \sum_{i=-1}^{2} \gamma_i \widetilde{\Delta y}_{mi}$$

- The monetary shock is the residual, ε_m.

$$+ \sum_{i=-1}^{2} \lambda_i (\widetilde{\Delta y}_{mi} - \widetilde{\Delta y}_{m-1,i}) + \sum_{i=-1}^{2} \varphi_i \tilde{\pi}_{mi}$$

- Note that this model is linear.

$$+ \sum_{i=-1}^{2} \theta_i (\tilde{\pi}_{mi} - \tilde{\pi}_{m-1,i}) + \rho \tilde{u}_{m0} + \varepsilon_m .$$

2. Summary of some details of Hack-Istrefi-Meier

2. Summary of some details of Hack-Istrefi-Meier

A. Authors' econometric argument:

Suppose you estimate a constant-coefficient Taylor Rule:

$$i_t = b' x_t + e_t^m$$

but in reality *b* varies with the hawk/dove balance, i.e.,:

$$i_t = (b + \phi_t)' x_t + \epsilon_t^m$$

They argue that ϵ_t^m is the true shock, but if one estimates the constant-coefficient Taylor Rule, the estimated shock will be:

$$\hat{e}_t^m = [\phi_t' x_t - E(\phi_t' x_t)] + \epsilon_t^m$$

and this will lead to bias.

Previous work shows that the Hawk-Dove balance changes Taylor Rule coefficients

Bordo-Istrefi JME 2023

Table 4
Taylor Rules, FOMC composition as interaction terms, 1987–2007.

Variables	(1)	(2)	(3)
Greenbok Inflation	1.78***	1.78***	1.71***
	(0.11)	(0.11)	(0.10)
Greenbook Output gap	0.65***	0.65***	0.71***
	(0.05)	(0.05)	(0.06)
Hawk-Dove Balance			
Inflation*d(*HD*)		0.03*	
		(0.01)	
OutputGap*d(*HD*)		−0.02	
		(0.01)	
Supermajorities Hawk-Dove balance			
Inflation*Dove			−0.35**
			(0.15)
Inflation*Hawk			−0.13
			(0.08)
OutputGap*Dove			0.01
			(0.07)
OutputGap*Hawk			−0.17**
			(0.08)

2. Summary of some details of Hack-Istrefi-Meier (cont.)

B. Show that leading estimated monetary shocks are predictable.

Authors regress the Romer-Romer and other shocks on interactions of hawk/dove balance and change in hawk/dove balance interacted with Greenbook forecasts and find that they predict the Romer-Romer shocks.

2. Summary of some details of Hack-Istrefi-Meier (cont.)

B. Show that leading estimated monetary shocks are predictable.

Authors regress the Romer-Romer and other shocks on interactions of hawk/dove balance and change in hawk/dove balance interacted with Greenbook forecasts and find that they predict the Romer-Romer shocks.

C. They create new monetary shocks by purging the Romer-Romer and other shocks of correlations with the hawk/dove interactions.

2. Summary of some details of Hack-Istrefi-Meier (cont.)

B. They show that leading estimated monetary shocks are predictable.

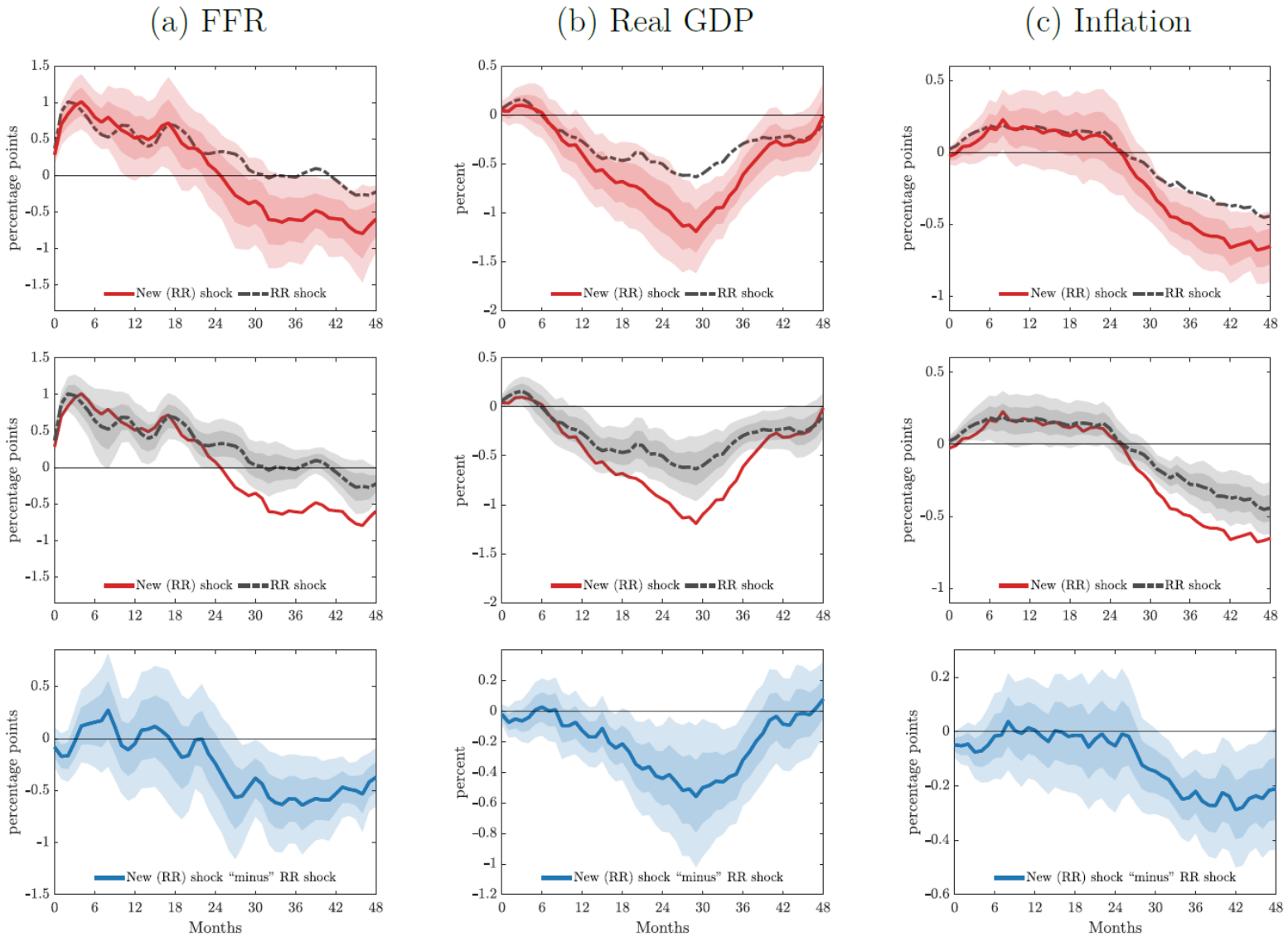
Authors regress the Romer-Romer and other shocks on interactions of hawk/dove balance and change in hawk/dove balance interacted with Greenbook forecasts and find that they predict the Romer-Romer shocks.

C. They create new monetary shocks by purging the Romer-Romer and other shocks of correlations with the hawk/dove interactions.

D. They estimate the effects on macro variables and compare new to old.

The shocks are estimated from 1969 to 2007, but they use IRFs only from 1983 for their baseline. I think they should the IRF analysis baseline should be the same sample as the estimates of the shocks, so I will show those results.

Figure C.7: Responses for estimation sample 1969-2007



- I think these are price level responses, not inflation responses.
- The FFR and price responses are the same across shocks for the first 24 months.
- But the GDP responses differ even during that time period.
- Is that possible in their NK model – can a monetary shock affect the economy other than through the policy rate?

3. How to Interpret a Monetary Policy Shock

3. How to Interpret a Monetary Policy Shock

- When I discussed a Bernanke-Mihov paper at a SF Fed conference in 1995, I asked how we should think of monetary policy shocks.

  - roll of the dice?
  - change in “the Fed’s utility function?”
  - outcome of FOMC bargaining?
  - actual rule is nonlinear?

3. How to Interpret a Monetary Policy Shock

- When I discussed a Bernanke-Mihov paper at a SF Fed conference in 1995, I asked how we should think of monetary policy shocks.

  - roll of the dice?
  - change in "the Fed's utility function?"
  - outcome of FOMC bargaining?
  - actual rule is nonlinear?

- If we don't have a compelling economic explanation for the shock, then it is just a "measure of our ignorance."

  - Contrast monetary shocks with military shocks for government spending.

3. How to Interpret a Monetary Policy Shock (cont.)

- I always liked the idea of changes in the Fed's utility function as a shock because it had economic meaning.

3. How to Interpret a Monetary Policy Shock (cont.)

- I always liked the idea of changes in the Fed's utility function as a shock because it had economic meaning.

- Owyang-Garey Ramey (2004 JME)

  - Estimate a regime switching model of hawks and doves based on a model and observed outcomes for inflation and unemployment.

    Weight on unemployment in the loss function follows a two-state Markov process.

  - Estimate that monetary policy was in a dove regime in the late 1960s, mid-1970s, and late 1970s-early 1980s.

  - Find that "switches to dove regimes … Granger-cause both NBER recessions and the Romer dates."

3. How to Interpret a Monetary Policy Shock (cont.)

- Owyang-Ramey use a switch to a dove regime as a shock in their VAR.

- In contrast, Hack-Istrefi-Meier use their hawk/dove balance to purge the Romer-Romer shock of its economic meaning.

- As I will argue below, I think they should use their hawk/dove rotation variable as *another* type of shock.

4. Linear versus Nonlinear Monetary Policy Rules

- Simple Taylor rule:

$$i_t = i_t^* + b_1(\pi_t - \pi_t^*) + b_2(u_t - u_t^*) + e_t^m$$

- Hack-Istrefi-Meier and Owyang-Ramey model the effects of the hawk/dove balance as affecting the *b* coefficients → nonlinear.

- However, utility function changes could also show up linearly as well.

  - Change in inflation target π_t^* or unemployment rate target u_t^*.

4. Linear versus Nonlinear Monetary Policy Rules (cont.)

Example:

Romer-Romer (BPEA 2024) link the 2021-2022 rise in inflation to three changes:

- More weight on employment term --- b_2, "maximum employment" - nonlinear
- Different employment target – employment rate of workers from disadvantaged groups --- run a "hot economy" - linear
- No preemptive moves against inflation.

4. Linear versus Nonlinear Monetary Policy Rules (cont.)

One could consider other nonlinear models.

- Asymmetric models

  There was some asymmetry in the Flexible Average Inflation Targeting (FAIT) framework – sought to mitigate shortfalls in employment from maximum employment but did not discuss responding to employment above maximum level.

- Size effects: Monetary policy rules that depend on the size of the deviation.

5. Monetary Policy Shocks as Complements, Not Substitutes

5. Monetary Policy Shocks as Complements, Not Substitutes

- Hack-Istrefi-Meier pose the question as though there can be only one shock to monetary policy.

5. Monetary Policy Shocks as Complements, Not Substitutes

- Hack-Istrefi-Meier pose the question as though there can be only one shock to monetary policy.

- But the Rudebusch-Sims debate taught us that this is not the case.

5. Monetary Policy Shocks as Complements, Not Substitutes

- Hack-Istrefi-Meier pose the question as though there can be only one shock to monetary policy.

- But the Rudebusch-Sims debate taught us that this is not the case.

  - Rudebusch (1997 IER) "Do Measures of Monetary Policy Make Sense?"

    - His answer was "no," in part because estimated shocks across standard methods (e.g. federal funds rate vs. Bernanke-Mihov vs. fed funds futures market shocks) produced shocks that have low correlations with each other.

  - Sims answered that one should think of these shocks as instruments and, using the analogy of identifying the demand curve, one can potentially have several valid instruments that are not correlated with each other (e.g. weather and insects as instruments that shift the supply curve).

5. Monetary Policy Shocks as Complements, Not Substitutes (cont.)

- Having several shocks is an advantage in the McKay and Wolf (2023) framework.
  - They developed a method for using times series results to create counterfactuals in a way that satisfies the Lucas critique.
  - A key input to their method is a set of policy shocks that affect the policy variable with different timing.

5. Monetary Policy Shocks as Complements, Not Substitutes (cont.)

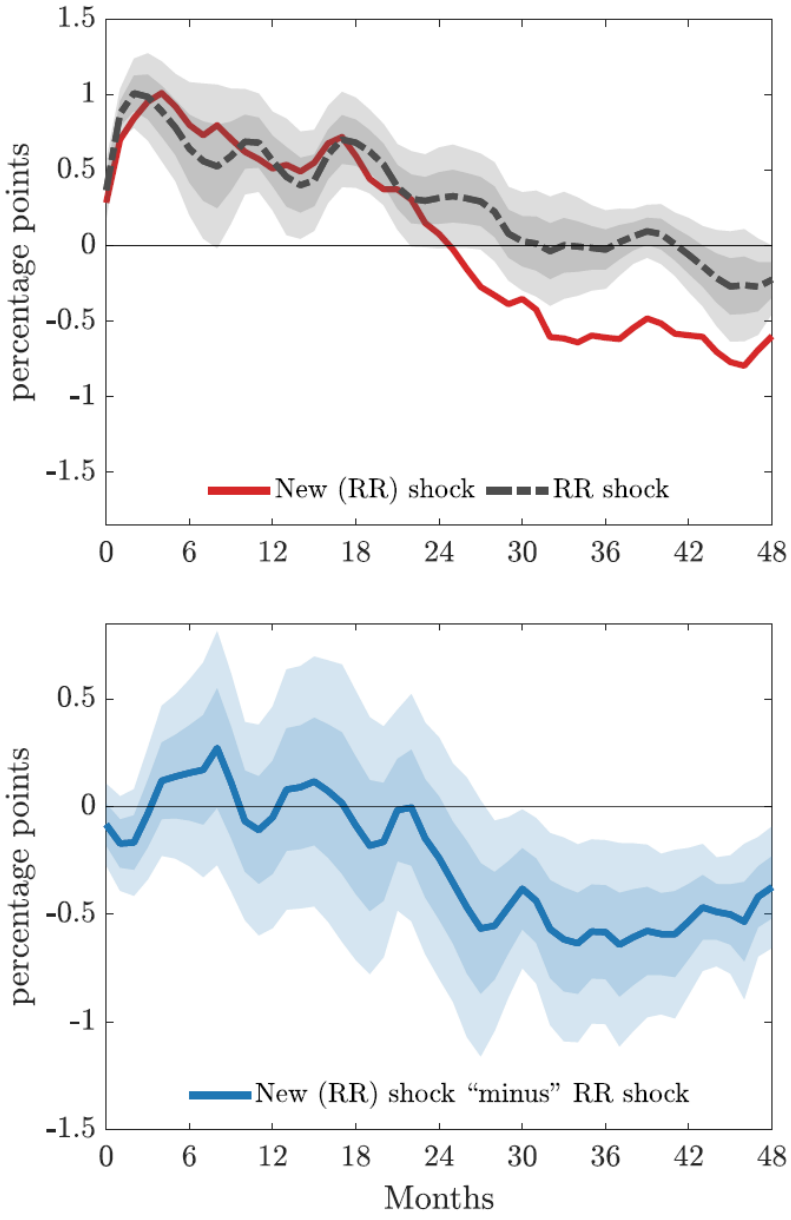
- Having several shocks is an advantage in the McKay and Wolf (2023) framework.
  - They developed a method for using times series results to create counterfactuals in a way that satisfies the Lucas critique.
  - A key input to their method is a set of policy shocks that affect the policy variable with different timing.
  - For example, they argue that the Romer-Romer monetary shock has more transitory effects on the federal funds rate, whereas the Gertler-Karadi high frequency shock has more persistence effects on the federal funds rate because it involves forward guidance elements.

5. Monetary Policy Shocks as Complements, Not Substitutes (cont.)

- Having several shocks is an advantage in the McKay and Wolf (2023) framework.
  - They developed a method for using times series results to create counterfactuals in a way that satisfies the Lucas critique.
  - A key input to their method is a set of policy shocks that affect the policy variable with different timing.
  - For example, they argue that the Romer-Romer monetary shock has more transitory effects on the federal funds rate, whereas the Gertler-Karadi high frequency shock has more persistence effects on the federal funds rate because it involves forward guidance elements.
- Hack-Istrefi-Meier's hawk/dove balance variable has the potential to provide information at different horizons.

5. Monetary Policy Shocks as Complements, Not Substitutes (cont.)

- The new RR shock is the RR shock purged of the hawk/dove balance interactions.
- The authors should include both the RR shock and a shock based on changes in the hawk/dove balance.
- The bottom graph shows the part of the hawk/balance shock that is orthogonal to the RR shock.



Conclusions

- Hack-Istrefi-Meier have contributed an important new shock to the monetary shock toolbox.
  - Based on rich narrative information.
  - Has a clear economic interpretation --- not a “measure of our ignorance.”
  - Based on nonlinearities in the monetary rule.
  - Explains part of other standard shocks.